

***MIYANO MODEL LZ-02RY2
QUICK LOADING CNC LATHE
TURNING CENTER W/Y-AXIS
AND REVOLVING TOOL ATTACHMENT***



MIYANO MODEL LZ-02RY2
3-AXIS SELF LOADING TURNING CENTER
AND REVOLVING TOOL ATTACHMENT

The LZ-02RY2 is a unique quick loading 3-axis CNC turning center with standard flexible automation. The high speed built in loader is already factory mounted. The loader is flexible to be easily modified to handle other parts by changing the gripper's configuration.

Industries targeted with this machine:

AUTOMOTIVE
COLD HEADED INDUSTRY
SECONDARY OPERATION



MIYANO MODEL LZ-02RY2
3-AXIS SELF LOADING TURNING CENTER

LZ-02RY2

3.93" Cutting diameter loader capacity

3.15" Work length loader capacity

LZ-02RY2 STANDARD FEATURES

Fanuc 21i-TB control

General purpose loader with two grippers and shutter

High pressure coolant system

Turret Y-axis

Total counter & preset counter

Double lifter

IN conveyor including: sensor, bracket, and software

OUT conveyor

Spindle air blow

Signal tower light 3 colors (red, yellow, & green)

Machine light

Pneumatic unit

40 to 5,000 rpm spindle speed

15 horsepower AC spindle drive motor

10-Station turret by Servo (index motor can be double tooled to 24 tool stations)

0.3 Second/station turret indexing

Revolving tool attachment for live spindle tooling

5 revolving tool stations on the turret

C-axis spindle control unit

Cylindrical interpolation

Polar coordinate interpolation

3.3 HP revolving tool drive unit

628 IPM rapid traverse for X-axis

628 IPM rapid traverse for Z-axis

490 IPM rapid traverse for Y-axis

Set of Miyano tool holders

2-year warranty on Fanuc control

1-year warranty on machine

STANDARD ACCESSORIES

Automatic lubrication system

Splashguard door with safety interlock

Hand tools and toolbox

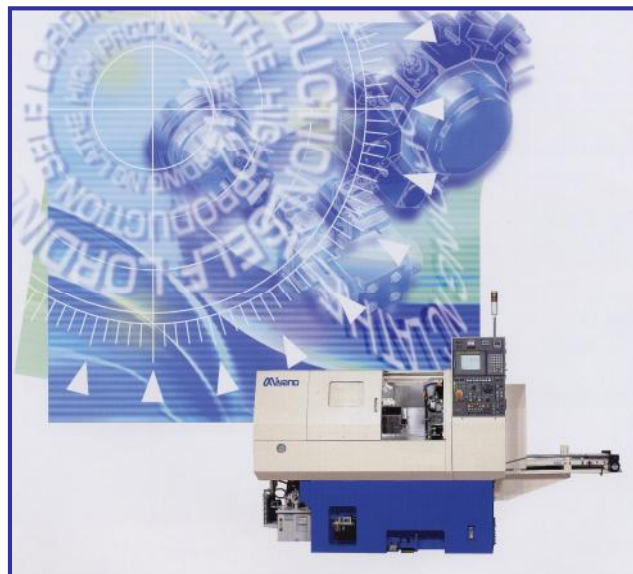
Instruction manual

Fanuc control manual

Parts list

Electrical diagrams

Leveling screws and plates



OPTIONAL EQUIPMENT

Revolving tools for drilling, milling and tapping
8" diameter 2 or 3-jaw chuck for spindle
Stationary type collet
Quick change collet system
Draw back collet system
Hardinge 5-C collet system
Chip conveyor (Gooseneck) (39.4" High) (Rear side)
460 Volt transformer
Spindle inner coolant
Spindle inner coolant with air purge
Chain type conveyor W/sensor, bracket, and software
Special IN/OUT conveyor
Bowl feeder
Stocker

MIYANO-FANUC 21i-TB CONTROL
NC SPECIFICATIONS

<u>FUNCTIONS</u>	<u>ITEM</u>	<u>DESCRIPTION</u>
Axis control	Controlled axis	Simultaneous X, Z
	Slide motor	AC Servomotor digital control
	Interpolation	Linear G01, Circular G02, G03
	Minimum output	X-axis: 0.00005" (0.0005mm) Z-axis: 0.0001" (0.001mm)
Programming	Method of command	Absolute (X, Z) Incremental (U, W)
	Min. command increment	0.0001"
	Max. command increment	99.999"
	I/O interface Program input method	EIA and or ISO by RS232C Keyboard, Optional DNC, other Optional DNC, other
Spindle	Direct command	G97 mode, G96 mode
Tool	Tool selection	T (2+2) code
	Tool offset	Same as above

OTHER FANUC 21i-TB STANDARD FEATURES

- Constant surface speed control
- Auto chamfering and corner rounding
- Back ground editing
- Tool nose radius compensation
- Custom Macro B
- Inch/metric conversion
- Programmable data input G10
- Tool geometry/wear compensation
- Parts program storage 131 Feet
- Multiple repetitive cycle (G70 - G76)



SPINDLE SLIDE

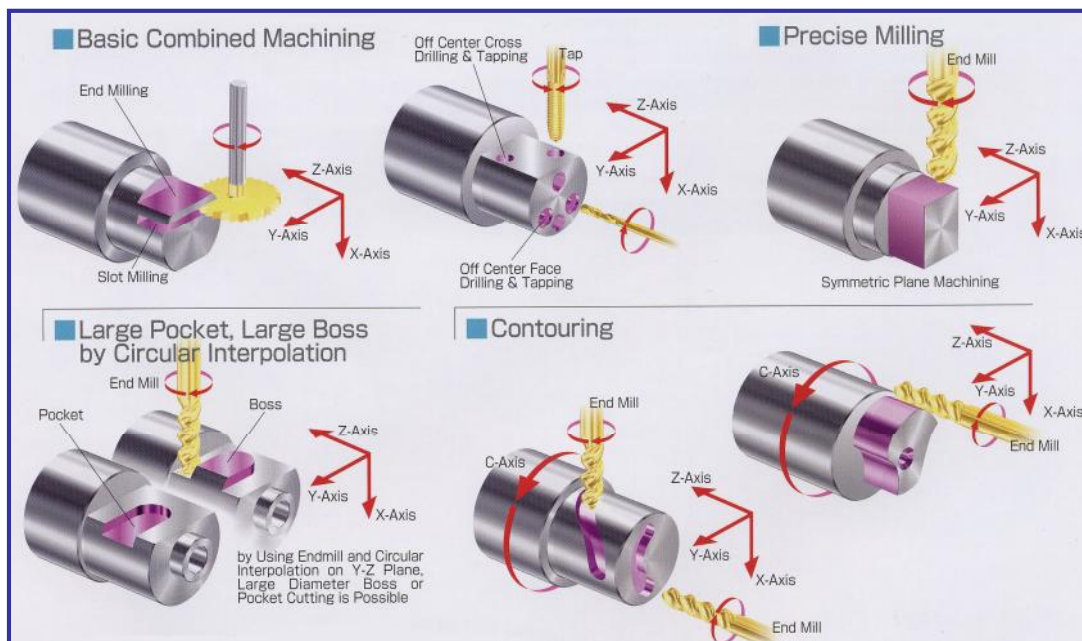
The spindle is mounted on hardened, hand scraped, ground, box /dove tail slides. The slides are driven by two servo motors in the X and Z-axis with high precision ball screws to allow the spindle to act as a pick up unit from general purpose air operated grippers that are ready for part exchange. The spindle then takes the part to be machined to the fixed position turret, to perform CNC machining, in the meantime the loader retracts to an In/Out conveyor system to pick up a new part while dropping the machined part on the out conveyor s system. These value-added concepts allow for inexpensive modification of the general -purpose grippers and the conveyors system for auto loading a new part. Automatic part loading and unloading is performed quickly and easily, minimizing idle time. All chips flow freely downward into the chip bed area without interfering with part cutting. (Depending on material.)

SPINDLE DRIVE

A 15 horsepower maximum rated AC spindle drive motor, with a spindle speed range from 40 to 5,000 RPM, provides an infinitely variable spindle speed selection through direct RPM spindle programming.

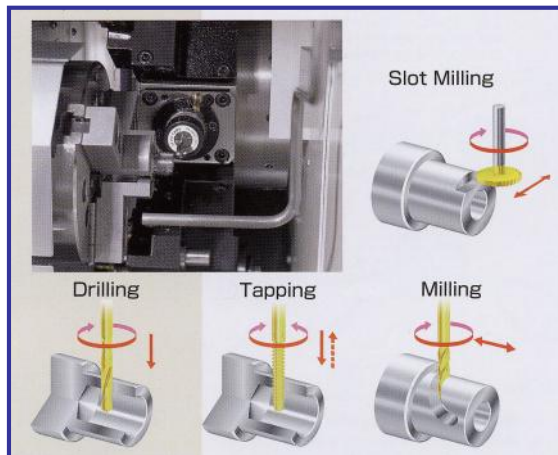
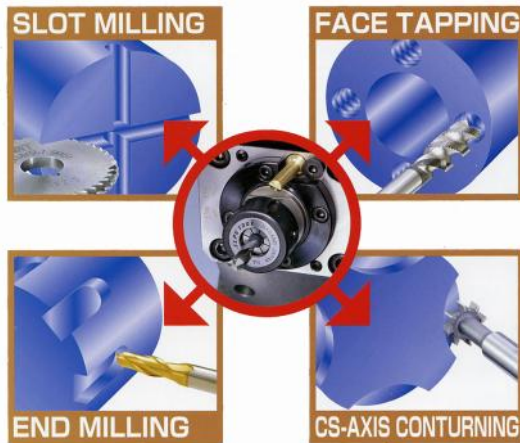
TURRET Y-AXIS CONTROL

Y-axis for machining is standard with the LZ-02RY2 machine. The CNC program moves the turret along the Y-axis slide to perform more complex milling and parallel hole drilling/tapping operations when the optional live tools are used. Standard C -axis built in brake system is automatically engaged to provide extra resistance to spindle rotational movement while performing Y -Axis machining. Similar to the other axis, a ball screw and servomotor drive this Y-axis slide. Now, more complicated machining is possible to be able to finish the parts complete in one set up.



REVOLVING TOOL ATTACHMENT (RTA)

The revolving tool attachment allows multiple machining operations to be performed by using live revolving tools attached to the turret. The optional revolving tools allow cross/end drilling, tapping, and milling operations to be performed on a part to finish it complete in one set up on the machine. Parts are completed in one continuous cycle. The turret accepts six revolving tools, providing a wide selection of machining capability on the spindle. The spindle is equipped with a C-axis control that provides indexing in 0.001-degree increments.



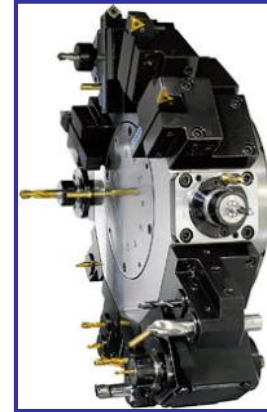
C-AXIS MAIN SPINDLE CONTROL (4-AXIS SYSTEM)

The spindle is equipped with a C-axis control for 4-axis machining. The spindle C-axis movement is controlled by the program to provide two-axis (X-C or Z-C) simultaneous movement. Spindle C-axis positioning is programmable in a minimum controllable angle of 0.001 degree increments for a full 360 degrees.

THE TURRET

The 10-station turret can be double-tooled to provide 19 tool stations for machining. Double tooling allows two tools to be mounted on the turret station by using combination tool holders. These exclusive Miyano tool holders can be set up with 2 cutting tools on each station. This flexible tooling selection reduces turret indexing permitting more efficient programming than can substantially reduce machining time.

The main turret provides fast indexing of 0.3 second from station to station. Bi-directional turret indexing allows the turret to automatically take the shortest path to the next selected cutting tool station. The turret is interference free, providing ample clearance between each tool station and the work piece, allowing any combination of O.D. or I.D. tools to be used.



HIGH PRESSURE COOLANT SYSTEM

A 160-PSI high-pressure coolant is fed through the turret for the station in use to the tip of the cutting tool. The program controls the coolant start/stop. The high -pressure coolant system operates independently from the flood coolant system for maximum chip flushing.

IN/OUT CONVEYOR

The standard IN/OUT conveyors are adjustable to cover the full range of the loader capacity. The IN/OUT conveyor can also be customized according to parts shape. The IN conveyor can be connected to a bowl feeder or other feeding mechanism. The OUT conveyor can also transfer the part to a desired point.

TOTAL AND PRESET COUNTER

The preset counter allows a pre-determined number of parts to be manufactured and then stops the machining cycle. The preset counter can also be used as an aid in production control and tool life management. The total counter will keep count of the total production runs for the machine while it is in cycle. It can also be reset for individual total part production.

DOUBLE LIFTER

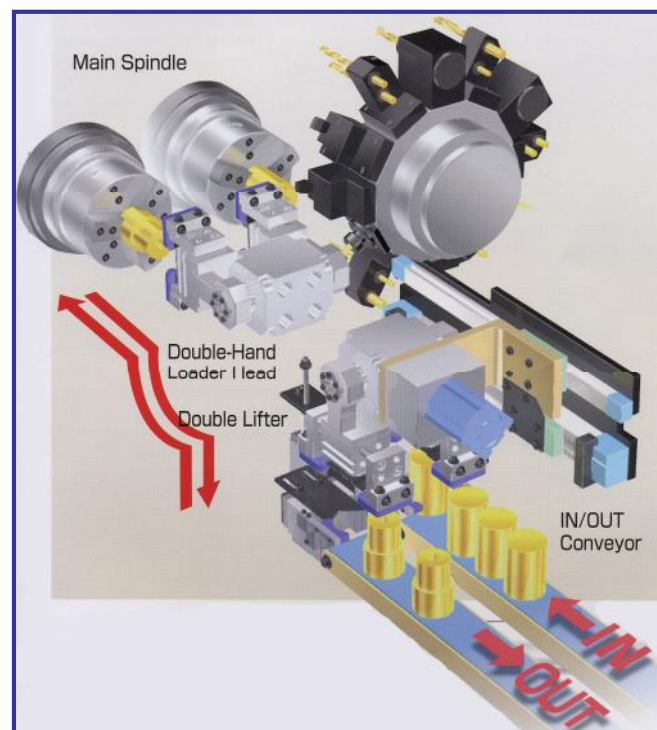
The standard double lifter is mounted at the end of the IN/OUT conveyors. As a part reaches the end of the IN conveyor, it is stopped by a V -block, and a sensor is activated, and a signal is sent to the lifter to grip the part. A cylinder then lifts the part upward to the loader gripper. (The lifter acts as an exchange unit between the loader grippers and the IN/OUT conveyor) The loader then swings 90 degrees upward into a horizontal position then moves forward to face the spindle for quick hand over operation.

GENERAL PURPOSE LOADING SYSTEM

A Miyano designed CNC controlled GENERAL PURPOSE LOADER is built into this machine as a standard feature. The loader has two gripper hands for loading/un-loading that are mounted outside to the right of the machine.

The loader is mounted on horizontal linear guide rails and moves in parallel to the spindle from right to left and vice versa through a CNC controlled shutter door that opens and closes. The two grippers can be moved, downward 90 degrees from the horizontal position to a vertical position by a rotary air cylinder. In the downward position the two-gripper are ready to drop off the finished part and pick up a new blank from the in/out conveyors. A double lifter acts as an exchange arm between the IN/OUT conveyor and the loader gripper hands. The blank part is handed to one gripper while finished part is removed from the other gripper hand. The rotary cylinder swings upward 90 degrees into the horizontal position allowing the two grippers to face a shutter that separates them from the spindle area. The shutter opens and the loader moves forward to a fixed position with one arm carrying a new blank and the other arm empty. The spindle rapids to the empty arm and hands over the finished part; it then rapids to the second arm to pick up a new part blank. The loader retracts to its home position, the shutter closes and the spindle, mounted on two axis rapids to the fixed position turret for machining during which a new part is being picked up by the loader and the same procedure is repeated.

This valuable concept allows the change over to machine other parts quickly due to the flexibility of the gripper hands and the in/out conveyors. The IN/OUT conveyor and gripper hands are adjustable to handle different diameter parts.



STANDARD TOOL HOLDER PACKAGE

Qty.	Part No.	Description
(1)	8L78100A	Single Plain Head
(4)	1X78010A	Turning Tool Holder A
(1)	1X78020A	Turning Tool Holder B
(4)	1X78040A	Double Plain Head A
(1)	5W78500A	Round Hole Bushing (1/4")
(1)	5W78510A	Round Hole Bushing (3/8")
(1)	5W78520A	Round Hole Bushing (1/2")
(1)	5W78530A	Round Hole Bushing (5/8")
(1)	5W78540A	Round Hole Bushing (3/4")



Single Plain Head
(8L78100A)



Turning Tool Holder A
(1X78010A)



Turning Tool Holder B
(1X78020A)



Double Plain Head A
(1X78040A)



Round Hole Bushing
(5 Piece Set)

Note: Actual tool holders may differ slightly from those shown above. Tool holders shown above accept 3/4" x 3/4" shank & 1.0" diameter tooling.

OPTIONAL REVOLVING TOOLS

Part No.	Description	Drill/Mill Collet / (Max Capacity)	Tapping Collet
1X783000	X-Drill/Mill	ER20 / (13mm)	ET1-20
1W782100	X-Drill/Mill	ER25 / (16mm)	ET1-25
1X783100	Z-Drill/Mill	ER20 / (13mm)	ET1-20
1W782200	Z-Drill/Mill	ER25 / (16mm)	ET1-25
1X783200	Y-Spindle Unit	ER16 / (10mm)	N/A
1X783300	Slot Mill Unit	N/A / (3.0" Diameter Saw)	N/A
R1W3750A	Extended Nose X-Drill/Mill	ER20 / (13mm)	ET1-20
80404414	Universal Head +/- 90 Deg.	ER16 / (10mm)	ET1-16



X-Drill/Mill
(1X783000)



X-Drill/Mill
(1W782100)



Z-Drill/Mill
(1X783100)



Z-Drill/Mill
(1W782200)



Y-Spindle Unit
(1X783200)



Slot Mill Unit
(1X783300)



Extended Nose
(R1W3750A)

SPINDLE INNER COOLANT (OPTION)

A rotary coupling connected to the coolant pump at one end is mounted on the rear of the chuck cylinder to supply coolant to the back of the work holding fixture. Coolant is used through the back of the spindle to flush chips at the chucking point. It is also used to remove chips during boring, reaming, and other I.D operations.

COLLET SYSTEM (OPTION)

A variety of collet systems are available for ID/OD to match the needs of the particular application. For example, HAR-5C collet assembly or H-S16 can be used.

CHUCK (OPTION)

The main spindle can be equipped with a 8" diameter, high-speed, 2 or 3-jaw hydraulic chuck. Changeover from chuck work to collet work can be performed in less than 10 minutes.

CHIP CONVEYOR (OPTION)

A hinge type chip conveyor is available to provide automatic chip disposal. The chip conveyor is located below the work area and chips are channeled out of the machine from the rear for easy discharge into a chip cart.

OTHER OPTIONS

Bowl feeders, in stocker and out stocker, can be easily retrofitted for the application requirements. Connecting another LZ-02RY2 for a second operation can also be easily achieved. For example, the OUT conveyor of the first machine can be the IN conveyor of a second machine with a reverse unit in between.

MACHINE INSTALLATION

At your plant facility, machine installation and start -up service is provided by a factory - trained service engineer who will assist in the set -up and production of your first part run.

WARRANTY

Miyano warrants the machine, Fanuc control and the products furnished to be free from defects in material and workmanship for one year (2 years on Fanuc control) from date of delivery to the original purchaser if given normal and proper usage, care and maintenance.

MODEL LZ-02RY2 SPECIFICATIONS**MACHINING CAPACITY**

Maximum turning diameter 3.93"
 Maximum turning length 3.15"
 Maximum swing diameter 20.07"

SPINDLE

Spindle speed range (infinitely variable) 40 To 5,000 RPM
 Spindle drive motor (30 minute rating) AC 15 HP
 Motor type AC motor
 Spindle nose A2-6

SPINDLE SLIDE

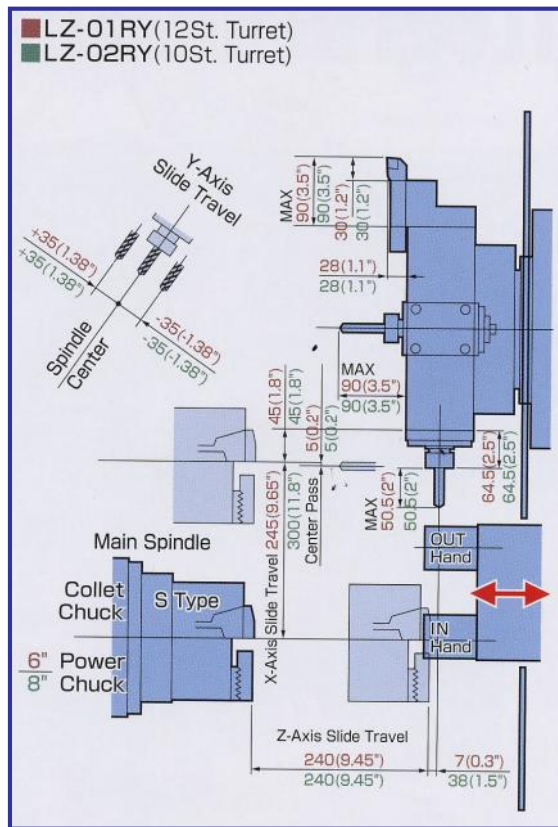
Slide travel X axis 11.8"
 Z axis 9.4"
 Y axis ±1.37"
 Rapid traverse rate X axis 628 IPM
 Z axis 628 IPM
 Y axis 490 IPM

GENERAL PURPOSE LOADER SYSTEM

Type of Grippers Double set
 Maximum Work size (diameter x length) 3.9" x 3.15"
 Minimum Work size (diameter x length) 1.18" x 1.18"
 Maximum work weight 3.3 lb. x 2
 Maximum Gripper stroke 1.57"
 Loader slide stroke 9.84"
 Lifter unit stroke (option) 3.93"
 Type of loader control PMC
 Type of drive unit and motion Pneumatic
 Load/unload time (Minimum) 6 secs.
 Minimum cycle time 14 sec.

TURRET TOOLING

Types of Turret clamping	Curvic
Number of tools	10
Tool Hole Diameter	1"
Tool Shank Size	3/4"
Turret indexing time	0.3 sec.



REVOLVING TOOL ATTACHMENT (RTA)

Number of positions	5
Speed range	135 to 4,000 RPM
Drive motor (maximum rating)	3.3 HP
Main spindle degree of index	0.001 degree

C-AXIS SPINDLE CONTROL UNIT

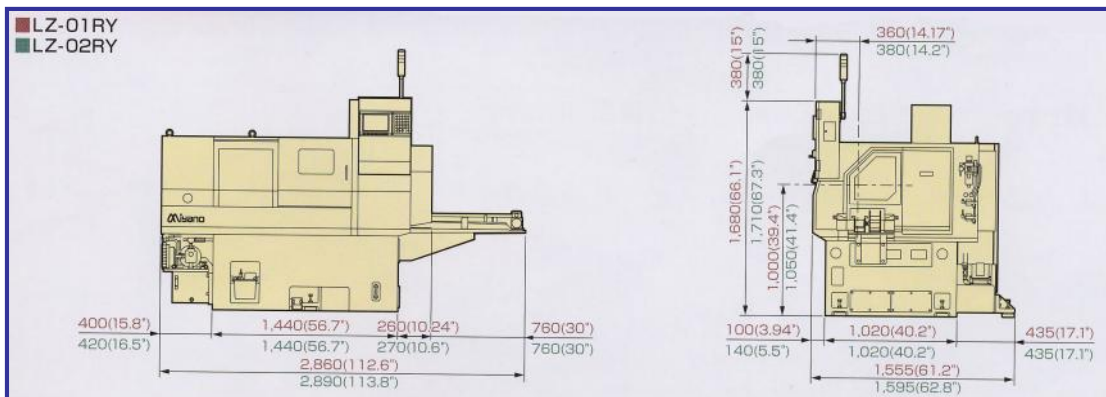
Spindle Positioning 360 Degrees
 Minimum Command increment 0.001 Degree
 Positioning System Cs Control built in Motor
 Simultaneous 2-axis movement (X-C) or (Z-C)
 C-axis repeatability +/- 0.917 Degree
 C-axis positioning accuracy +/- 0.2 Degree
 Rapid feed rate 33 RPM

GENERAL INFORMATION

Power required 28 KVA
 Voltage required 200/220 Volts
 Amperage required 100 Amps
 Compressed air required 80 PSI

MACHINE DIMENSIONS

Width 63"
 Height 82.3"
 Length 113.8" (with in/out conveyor)
 Height of Spindle Center 41.4"
 Machine Weight 9,500 lbs.



Miyano Machinery USA, Inc.

Quote

LZ-02RY2 (C-RTA)

January 2008

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TERMS: 10 % down with order, balance net 30 days after delivery

Order: The end user customer is to place their purchase order to:

Miyano Machinery, Inc.

940 N. Central Ave.

Wood Dale, IL 60191

FOB: Point of shipment – Wood Dale, IL or US Port of Entry

Specifications and prices are subject to change without notice.

The fulfillment of accepted orders is contingent on accidents, fire, strikes, or other causes beyond our control.

Thank you for the opportunity to quote on your machining requirements.

Sincerely,

Miyano Machinery, Inc.

